

CITY OF WAUKEGAN

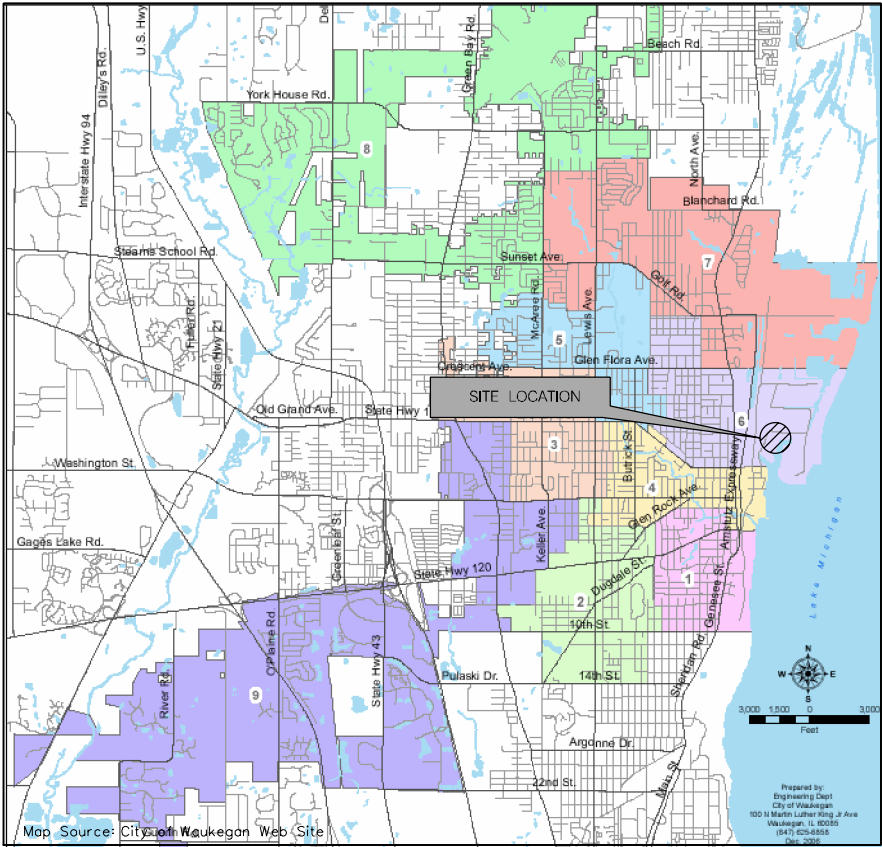
CONTAINMENT ALTERATION / BOAT STORAGE RE-USE

WAUKEGAN HARBOR SLIP 3 SITE

100% DESIGN SUBMITTAL
APRIL, 2009



PROJECT AERIAL MAP



SITE LOCATION MAP


DRAWING INDEX

- 1 COVER SHEET
- 2 EXISTING CONDITIONS PLAN
- 3 EXISTING CONDITIONS CROSS SECTIONS
- 4 EXCAVATION PLAN
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- 12 SECTIONS AND DETAILS (3 OF 4)
- 13 SECTIONS AND DETAILS (4 OF 4)

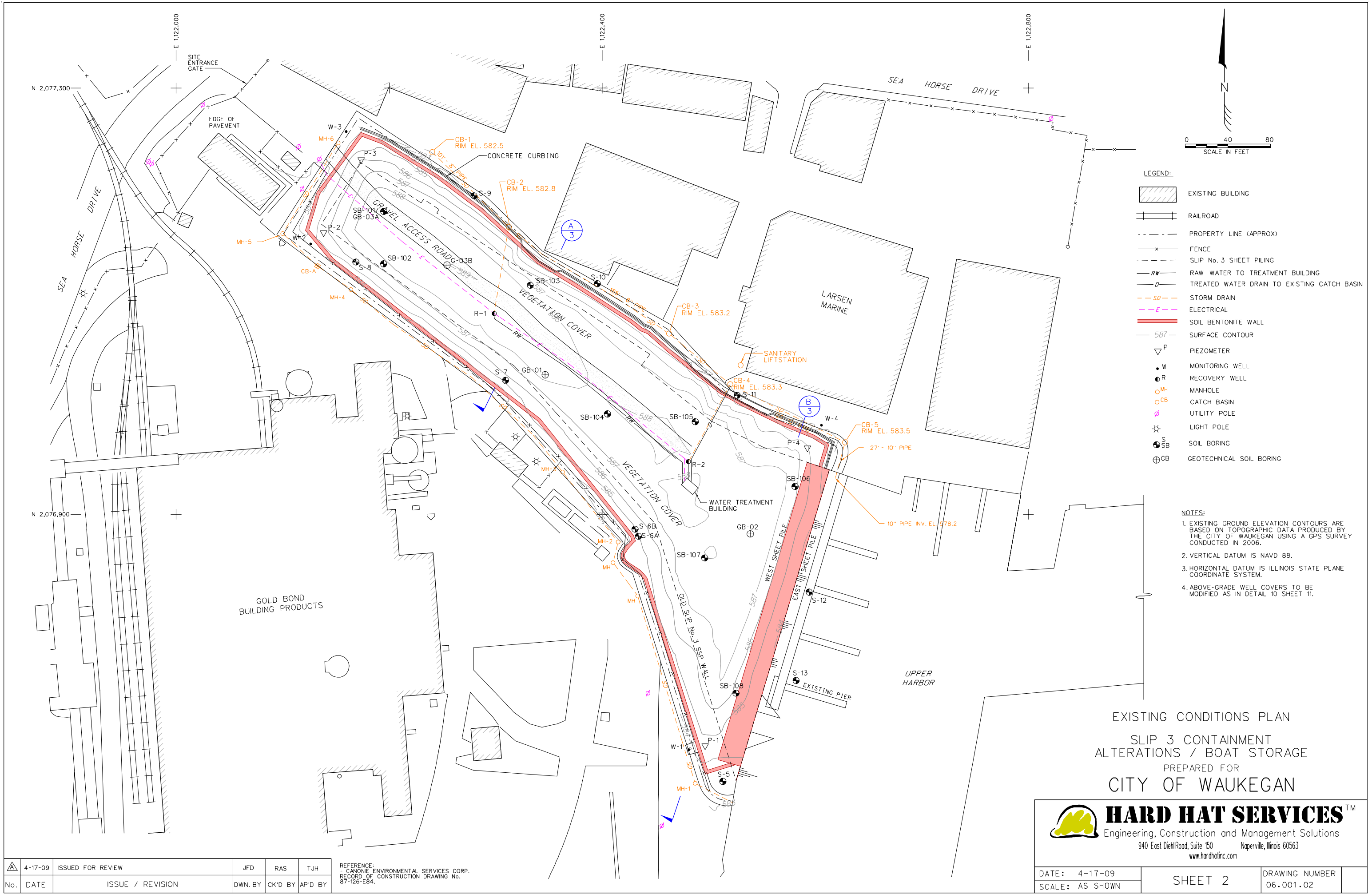
COVER SHEET

SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE
PREPARED FOR
CITY OF WAUKEGAN

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Engineering, Construction and Management Solutions
940 East Diehl Road, Suite 150 Naperville, Illinois 60563
www.hardhatinc.com

	4-17-09	ISSUED FOR REVIEW	JFD	RAS	TJH
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DATE: 4-17-09	SHEET 1	DRAWING NUMBER
SCALE: NONE		06.001.01




LEGEND:

- EXISTING BUILDING
- RAILROAD
- PROPERTY LINE (APPROX)
- FENCE
- SLIP No. 3 SHEET PILING
- RAW WATER TO TREATMENT BUILDING
- TREATED WATER DRAIN TO EXISTING CATCH BASIN
- STORM DRAIN
- ELECTRICAL
- SOIL BENTONITE WALL
- SURFACE CONTOUR
- PIEZOMETER
- MONITORING WELL
- RECOVERY WELL
- MANHOLE
- CATCH BASIN
- UTILITY POLE
- LIGHT POLE
- SOIL BORING
- GEOTECHNICAL SOIL BORING

- NOTES:
- EXISTING GROUND ELEVATION CONTOURS ARE BASED ON TOPOGRAPHIC DATA PRODUCED BY THE CITY OF WAUKEGAN USING A GPS SURVEY CONDUCTED IN 2006.
 - VERTICAL DATUM IS NAVD 88.
 - HORIZONTAL DATUM IS ILLINOIS STATE PLANE COORDINATE SYSTEM.
 - ABOVE-GRADE WELL COVERS TO BE MODIFIED AS IN DETAIL 10 SHEET 11.

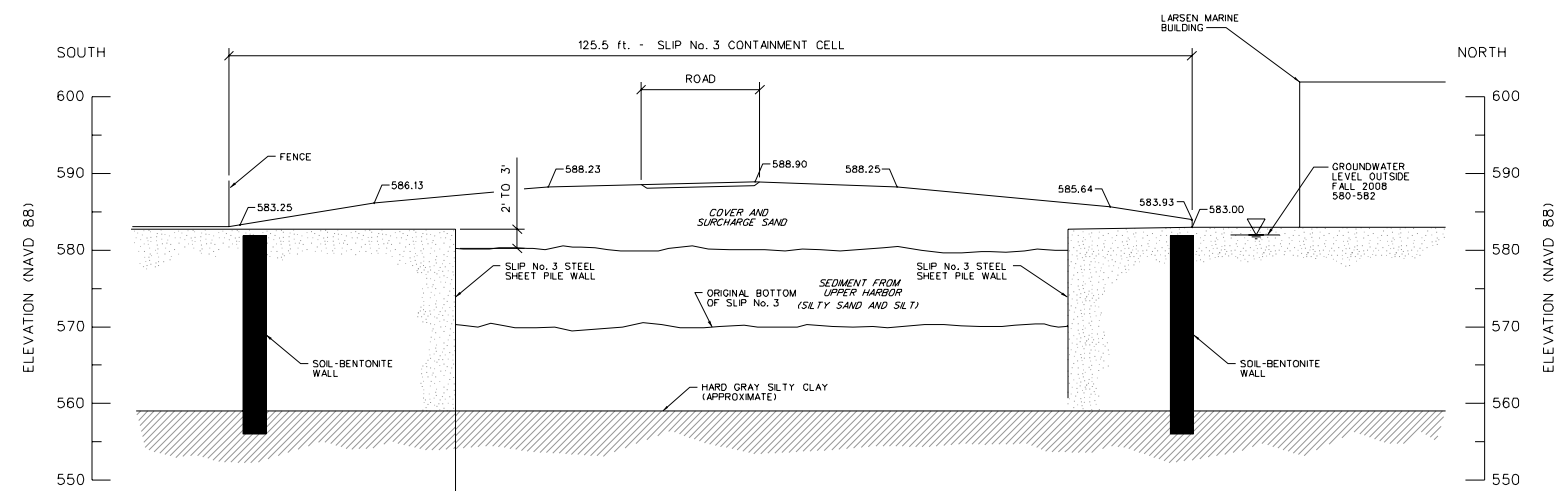
EXISTING CONDITIONS PLAN
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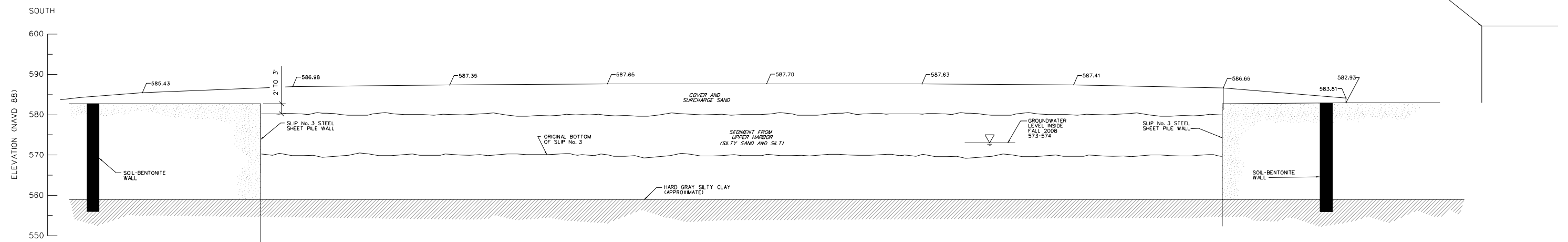
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REFERENCE:
- CANONIC ENVIRONMENTAL SERVICES CORP.
RECORD OF CONSTRUCTION DRAWING NO.
87-126-E84.

DATE: 4-17-09	SHEET 2	DRAWING NUMBER
SCALE: AS SHOWN		06.001.02



EXISTING CROSS SECTION **A**
0 12.5 25
HORIZONTAL SCALE IN FEET



EXISTING CROSS SECTION **B**
0 12.5 25
HORIZONTAL SCALE IN FEET


EXISTING CONDITIONS CROSS SECTIONS

SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE

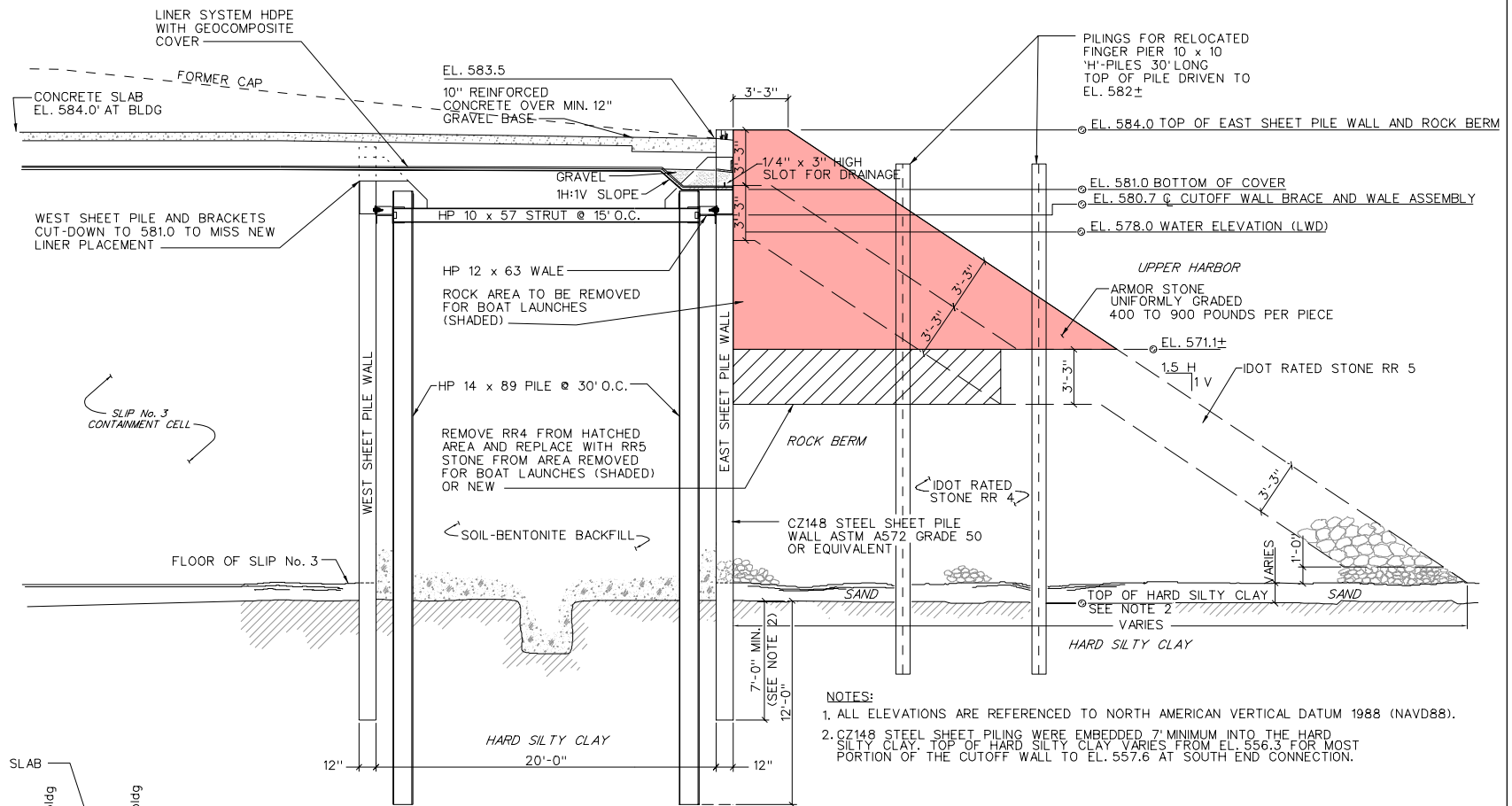
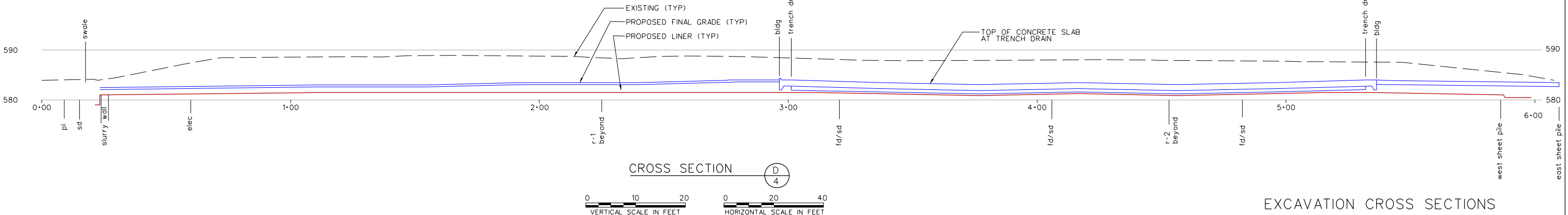
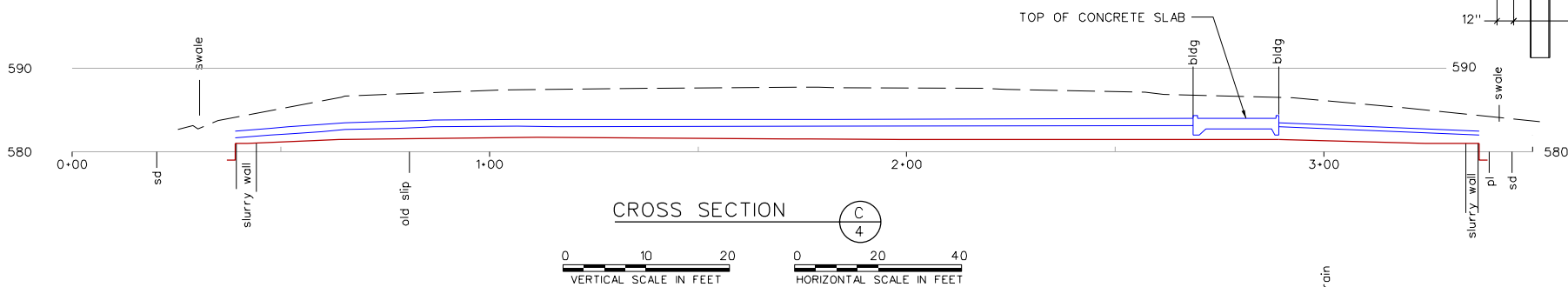
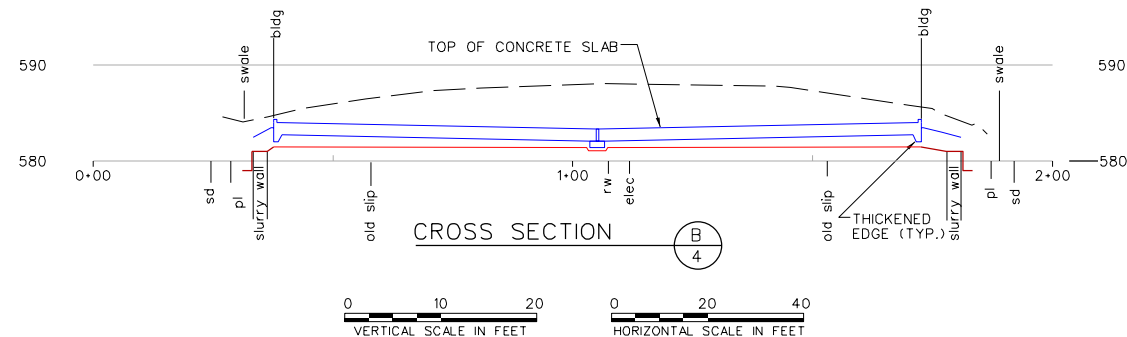
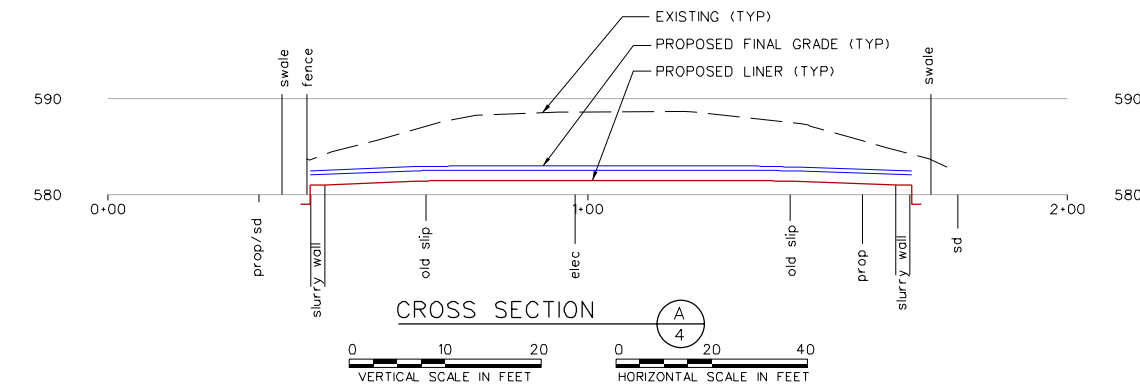
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SCALE: AS SHOWN		06.001.03



- NOTES:
1. ALL ELEVATIONS ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
 2. CZ148 STEEL SHEET PILING WERE EMBEDDED 7' MINIMUM INTO THE HARD SILTY CLAY. TOP OF HARD SILTY CLAY VARIES FROM EL. 556.3 FOR MOST PORTION OF THE CUTOFF WALL TO EL. 557.6 AT SOUTH END CONNECTION.

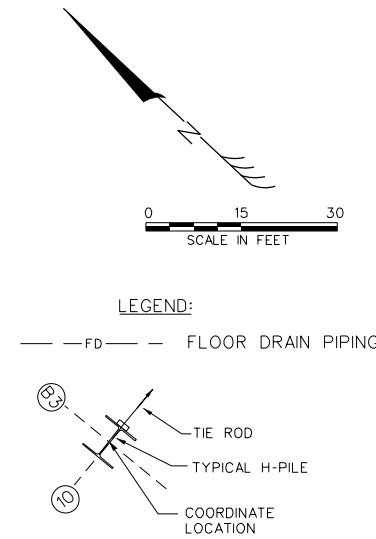
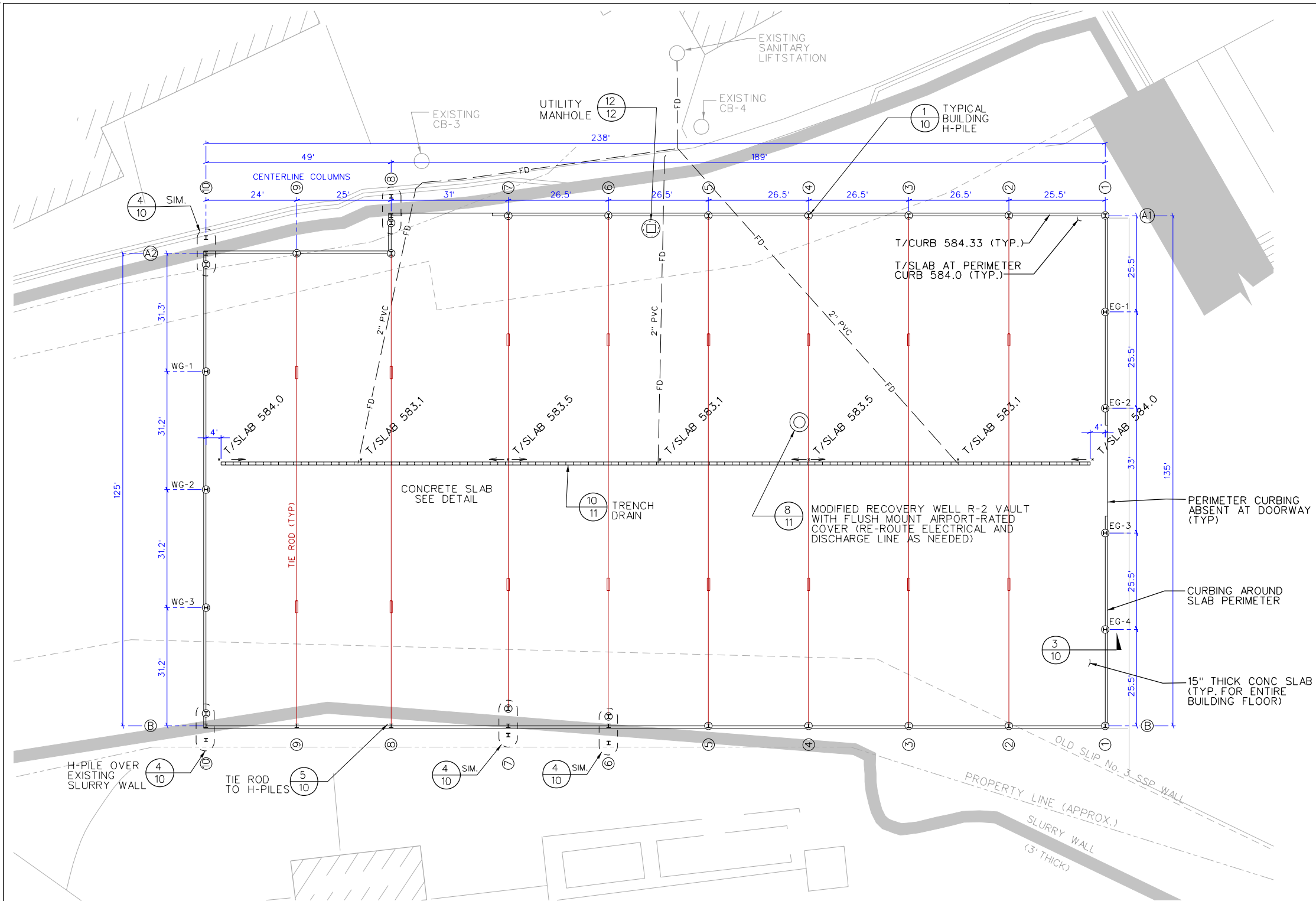
EXCAVATION CROSS SECTIONS
SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE
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REFERENCE:
CANONIE ENVIRONMENTAL SERVICES CORP.
RECORD OF CONSTRUCTION DRAWING No.
87-126-E82.

DATE: 4-17-09	SHEET 5	DRAWING NUMBER
SCALE: AS SHOWN		06.001.05



- GENERAL NOTES:**
- COORDINATES ARE IN THE ILLINOIS STATE PLANE COORDINATE SYSTEM.
 - BUILDING LAYOUT AND COLUMN LOCATIONS PROVIDED BY LARSEN MARINE SERVICES.
 - ELEVATIONS ARE IN NAVD, 1988.
 - H-PILES SHALL BE DRIVEN AT LEAST 5-FEET INTO GLACIAL TILL (DEFINED AS FIVE-FEET OF PENETRATION AFTER NO FURTHER PENETRATION IS POSSIBLE WITH A VIBRATORY HAMMER).
 - H-PILES SHALL BE DRIVEN ON LINE WITH NO VARIATION FROM LINE OF MORE THAN 2-INCHES. ALL DIMENSIONS AND COORDINATES SHOWN ARE FROM H-PILE CENTERLINES.
 - PIPING AND ELECTRICAL CONDUITS SHALL BE INSTALLED ABOVE THE BUILDING TIE-RODS.
- STRUCTURAL NOTES:**
- STRUCTURAL STEEL (H-PILES) SHALL MEET THE REQUIREMENTS OF ASTM A992.
 - WELDS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF A WS WELDING STANDARDS USING E70XX ELECTRODE.
 - STEEL STUDS SHALL COMPLY WITH ASTM A108, GRADE DESIGNATION 1010 THROUGH 1020 AND AWS DL5.
 - STRUCTURAL BOLTS SHALL BE ASTM A325 GRADE.
 - HIGH STRENGTH STEEL TIE RODS SHALL BE GALVANIZED GRADE 75
 - CONCRETE SHALL HAVE A 28-DAY UNCONFINED COMPRESSIVE STRENGTH OF 4000 PSI.
 - COARSE AGGREGATE FOR CONCRETE SHALL HAVE A MAXIMUM AGGREGATE SIZE OF 1 1/2 INCH AND MEET THE REQUIREMENTS OF ASTM C33.
 - CONCRETE SLAB ON GRADE EXPOSED OUTSIDE SHALL CONTAIN 5% AIR ENTRAINMENT.
 - CONCRETE REINFORCING STEEL SHALL BE GRADE 60.
 - CHAIRS SHALL BE USED DURING SLAB-ON-GRADE POURS TO POSITION BOTTOM REINFORCING 3-INCHES ABOVE GROUND.
 - SLAB ON GRADE SHALL BE SEPARATED FROM H -PILE HDPE SURROUNDS AND BY COMPRESSIBLE MEDIUM.
 - BASE COARSE GRAVEL SHALL MEET THE GRADATION REQUIREMENTS OF ILLINOIS DOT CA-6, AND THE QUALITY REQUIREMENTS OF ILLINOIS DOT 704.1.
 - WHERE GRADE BEAM CROSSES SLURRY WALL, BACKFILL WITH SAND CONTAINING 10% BENTONITE BY WEIGHT BELOW LINER.
 - EXPANDING WATERSTOP VOLCLAY WATERSTOP-RX OR EQUAL SHALL BE INSTALLED AT COLD JOINTS IN SLAB AND AROUND H-PILE PENETRATIONS.
 - INTERNAL SUPPORTS SHALL BE USED IN SLAB POUR TO POSITION UPPER REINFORCING LAYER 1 1/2-INCH BELOW TOP OF SLAB.

FOUNDATION / SLAB PLAN
AND H-PILE LOCATIONS

SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE

PREPARED FOR

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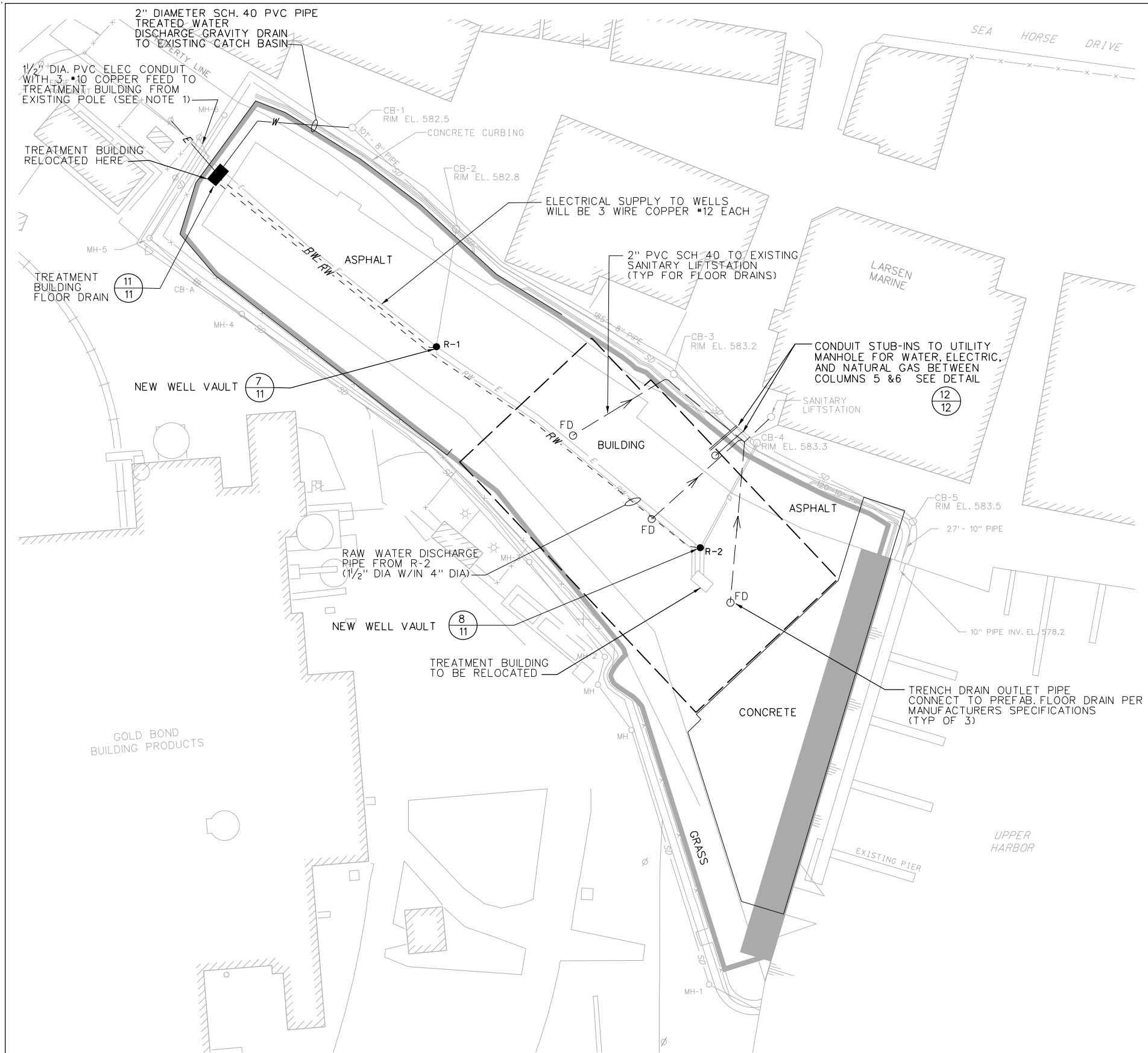
GABLE WALL H-PILE CENTER LOCATIONS			
PILE	NORTHING	EASTING	
WG-1	N 2,077,072.97	E 1,122,383.06	
WG-2	N 2,077,051.55	E 1,122,360.31	
WG-3	N 2,077,030.13	E 1,122,337.56	
EG-1	N 2,076,910.47	E 1,122,557.67	
EG-2	N 2,076,893.00	E 1,122,539.10	
EG-3	N 2,076,870.38	E 1,122,515.07	
EG-4	N 2,076,852.90	E 1,122,496.51	

BUILDING H-PILE CENTER LOCATIONS			
PILE	NORTHING	EASTING	
A1-1	N 2,076,927.95	E 1,122,576.24	
A1-2	N 2,076,946.53	E 1,122,558.77	
A1-3	N 2,076,965.81	E 1,122,540.60	
A1-4	N 2,076,985.11	E 1,122,522.43	
A1-5	N 2,077,004.41	E 1,122,504.27	
A1-6	N 2,077,023.71	E 1,122,486.11	
A1-7	N 2,077,042.99	E 1,122,467.94	
A1-8	N 2,077,065.57	E 1,122,446.69	

BUILDING H-PILE CENTER LOCATIONS (CONT.)			
PILE	NORTHING	EASTING	
A2-8	N 2,077,058.71	E 1,122,439.41	
A2-9	N 2,077,076.91	E 1,122,422.28	
A2-10	N 2,077,094.39	E 1,122,405.83	
B-1	N 2,076,835.42	E 1,122,477.94	
B-2	N 2,076,853.99	E 1,122,460.46	
B-3	N 2,076,873.29	E 1,122,442.30	
B-4	N 2,076,892.58	E 1,122,424.14	
B-5	N 2,076,911.88	E 1,122,405.97	
B-6	N 2,076,931.17	E 1,122,387.80	
B-7	N 2,076,950.47	E 1,122,369.64	
B-8	N 2,076,973.04	E 1,122,348.39	
B-9	N 2,076,991.25	E 1,122,331.26	
B-10	N 2,077,008.72	E 1,122,314.81	

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LEGEND:

- FD FLOOR DRAIN
- R-2 RECOVERY WELL AND VAULT
- E— 2" PVC SCH 40 ELECTRICAL CONDUIT WITH 3*6 WIRE FROM TREATMENT PLANT TO EACH WELL (ABOVE NEW LINER)
- RW— PIPE 1 1/2" DIA. HDPE LINE BUTT WELDED ENCLOSED IN A 4" PVC SCH 40 CONDUIT CARRIER PIPE RUNNING TO TREATMENT BUILDING (ABOVE NEW LINER)
- //— 2" HDPE TREATED WATER DISCHARGE PIPE FROM RELOCATED TREATMENT BUILDING TO EXISTING CATCH BASIN (CB-1) GRAVITY DRAIN

NOTES:

1. MAINTAIN EXISTING POWER FED FROM POLE WITH NEW UNDERGROUND FEED TO RELOCATED TREATMENT BUILDING.
2. HDPE PIPE SHALL BE SDR 17.
3. BUILDING DOWNSPOUTS TO BE INSTALLED NO MORE THAN 18" BELOW GRADE AND UNDER SUPERVISION OF THE CITY OF WAUKEGAN.

MECHANICAL AND ELECTRICAL PLAN
 SLIP 3 CONTAINMENT
 ALTERATIONS / BOAT STORAGE
 PREPARED FOR
 CITY OF WAUKEGAN

HARD HAT SERVICES™

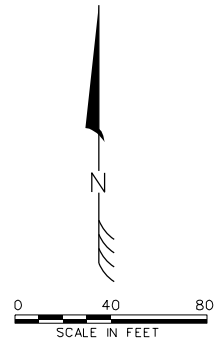
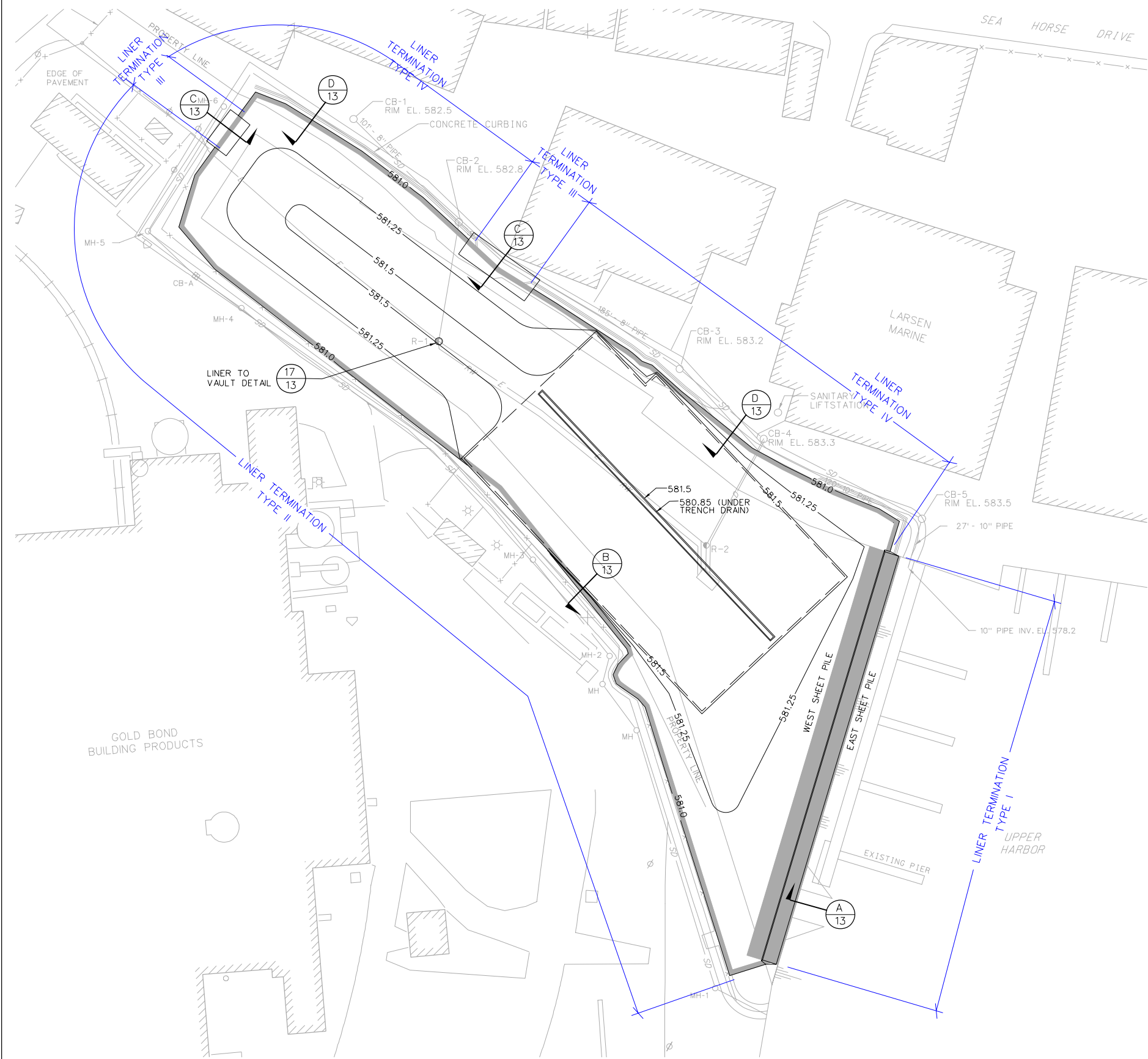
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LEGEND:
SLURRY WALL

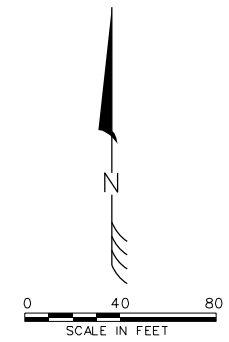
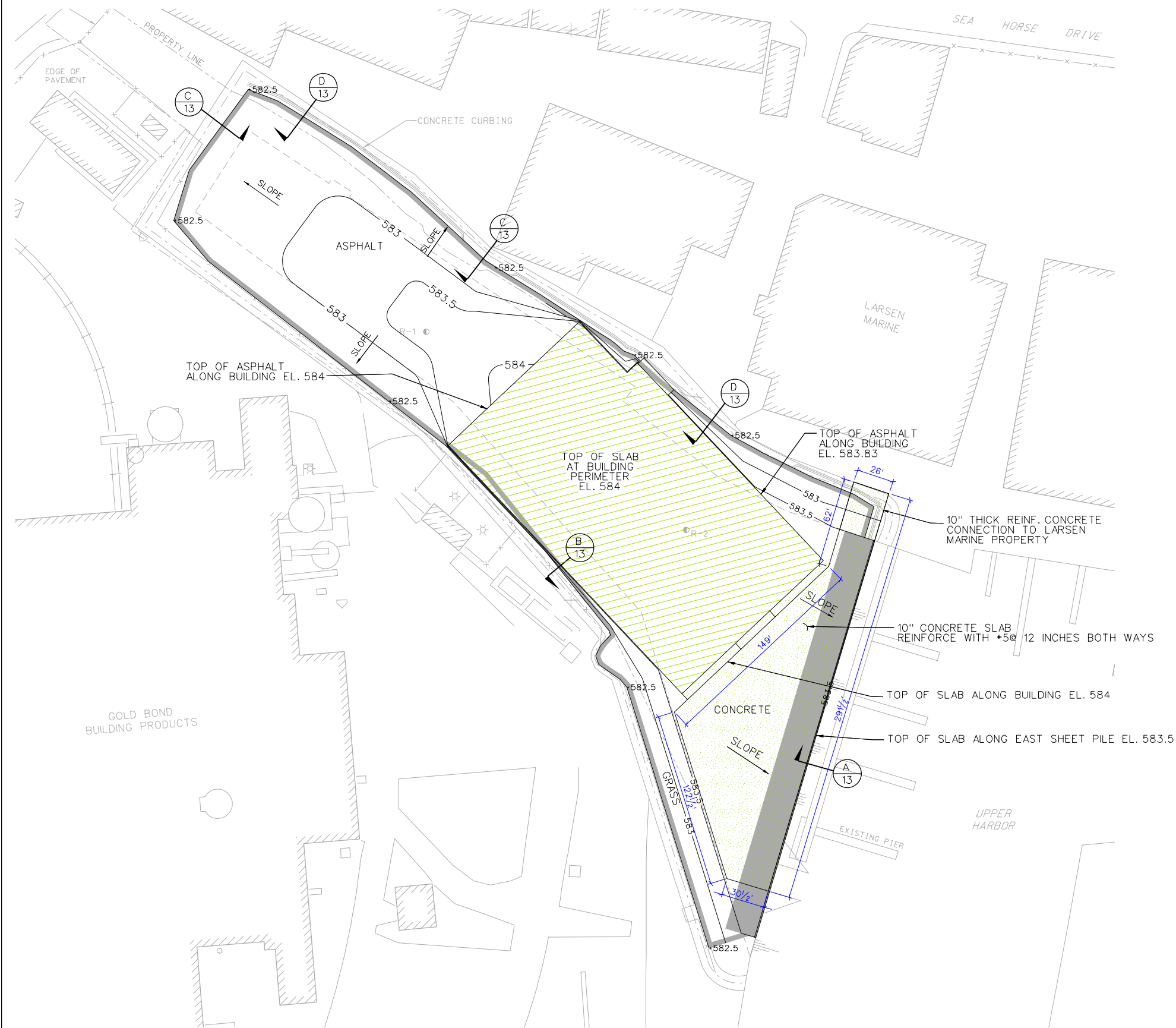
NOTE:
1. LINER MATERIAL TO BE SMOOTH 60-MIL HDPE.
2. REMOVE ROCKS AND OTHER OBJECTS FROM SURFACE PRIOR TO PLACING LINER TO MINIMIZE RISK OF LINER PUNCTURE.

TOP OF LINER PLAN
SLIP 3 CONTAINMENT
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PREPARED FOR
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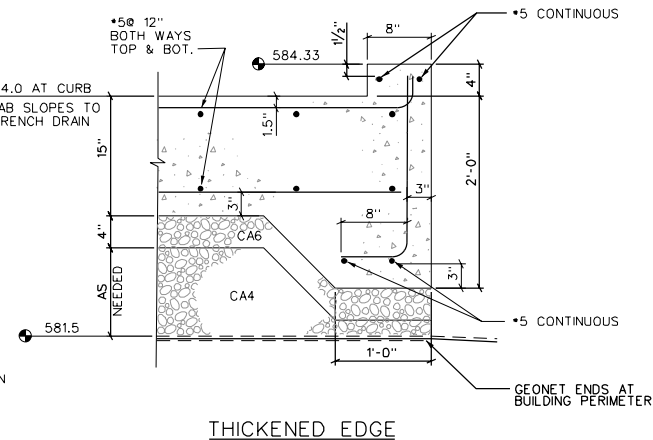
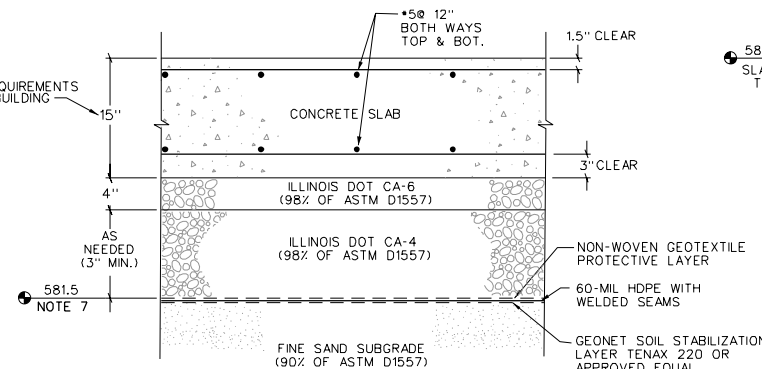
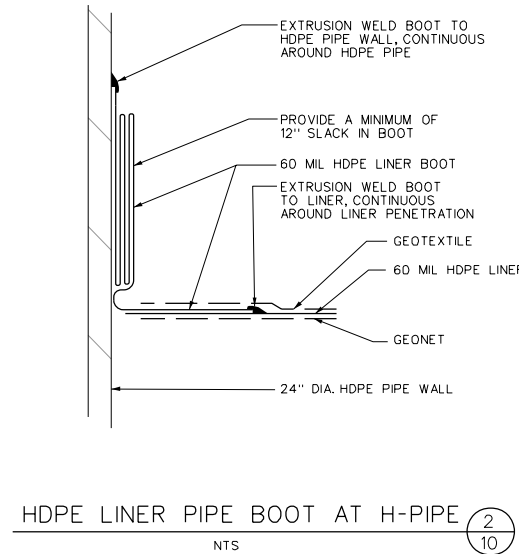
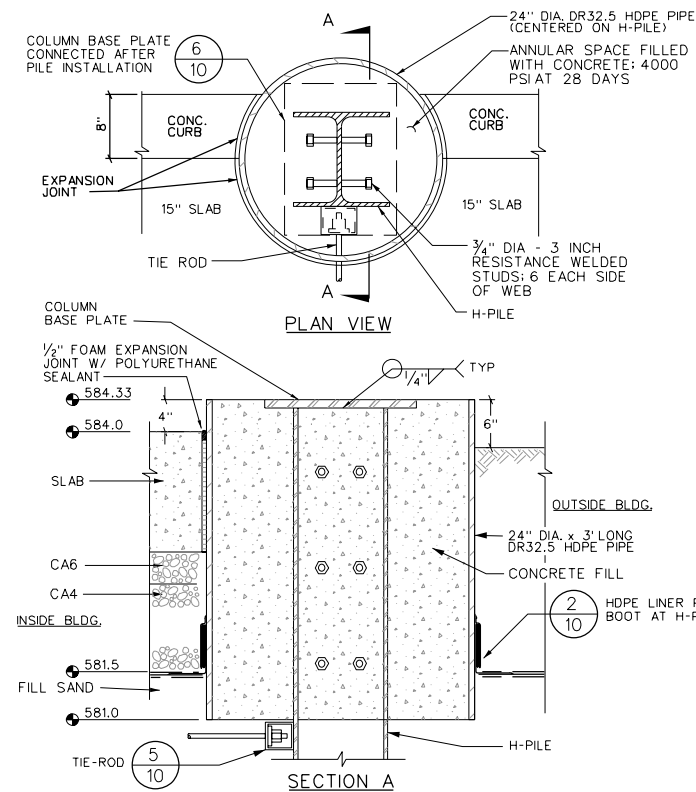


FINISHED SURFACE PLAN
 SLIP 3 CONTAINMENT
 ALTERATIONS / BOAT STORAGE
 PREPARED FOR
 CITY OF WAUKEGAN

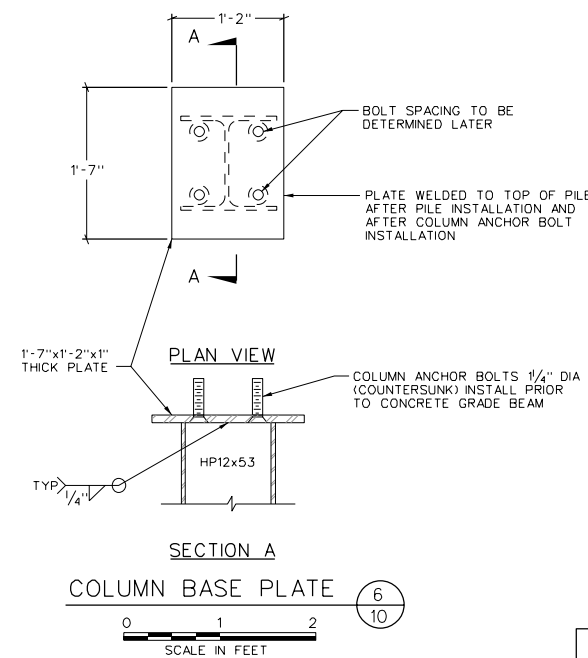
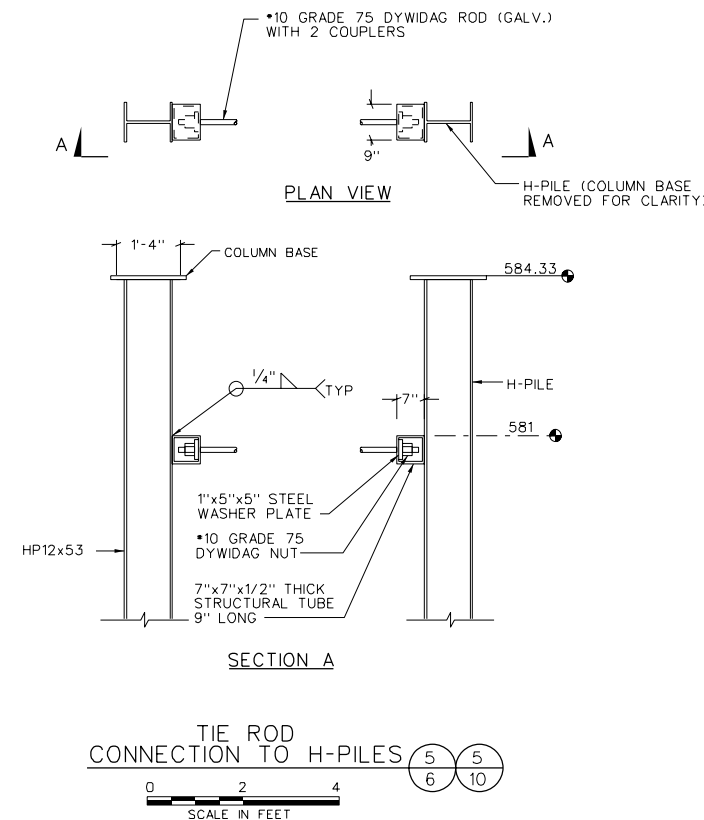
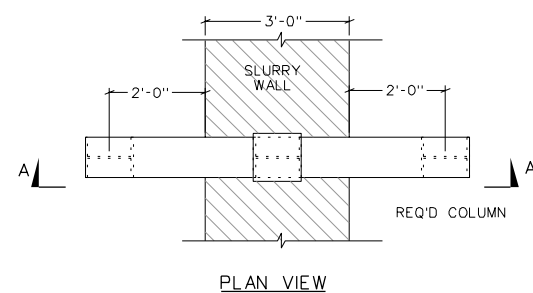
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- NOTES:**
- PITCH CENTER OF SLAB (BETWEEN RACK STORAGE PILES) 1" / 10' TOWARDS DRAIN.
 - USE #5 BARS AT 12-INCH CENTERS BOTH DIRECTIONS, 3-INCHES FROM BOTTOM AND 1 1/2-INCH FROM TOP.
 - CUT CONTROL JOINTS 1/2" DEEP AT APPROXIMATELY 25 FT CENTERS (LINED UP WITH RACK COLUMNS).
 - COLD JOINTS AT LOCATION APPROVED BY ENGINEER W #6 DOWELS ON 12 INCH CENTERS.
 - COLD JOINTS SEALED WITH GRAY POLYURETHANE SEALANT AND VOLCLAY WATERSTOP.
 - USE 10-INCH THICK SLAB OUTSIDE OF BUILDING FOOTPRINT AS INDICATED ON SHEET 9 WITH ONE LAYER OF #5 BARS AT 12-INCH CENTERS IN MIDDLE OF SLAB.
 - LINER UNDER BUILDING SLAB TO BE PLACED AT A CONSTANT ELEVATION OF 581.5 EXCEPT WHERE LOWERED TO ACCOMMODATE TRENCH DRAIN (SEE DETAIL 10 ON SHEET 11).



SECTIONS AND DETAILS (1 OF 4)

SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE

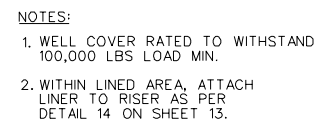
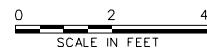
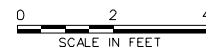
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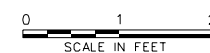
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NOT TO SCALE

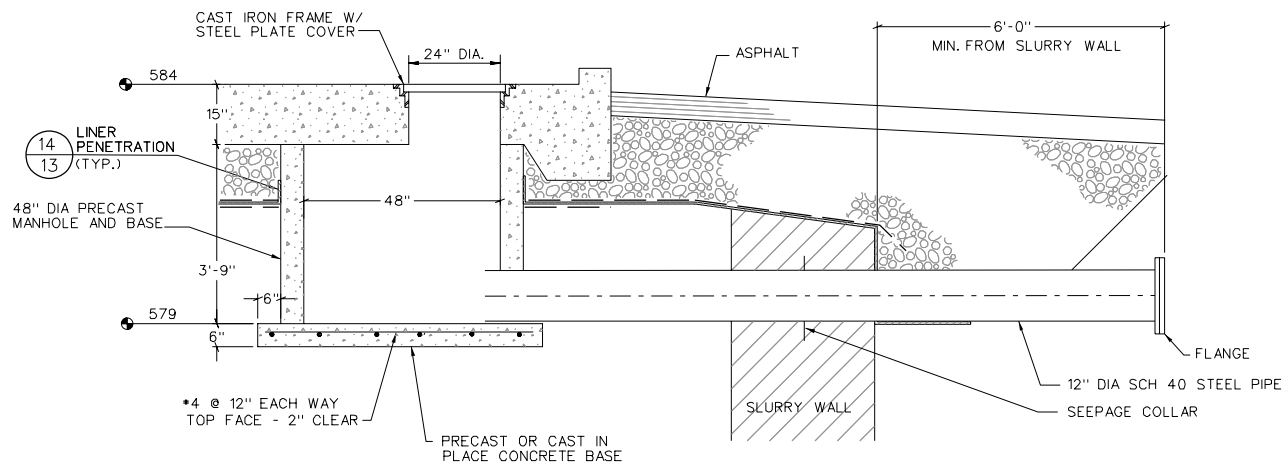


0 0.5 1
SCALE IN FEET

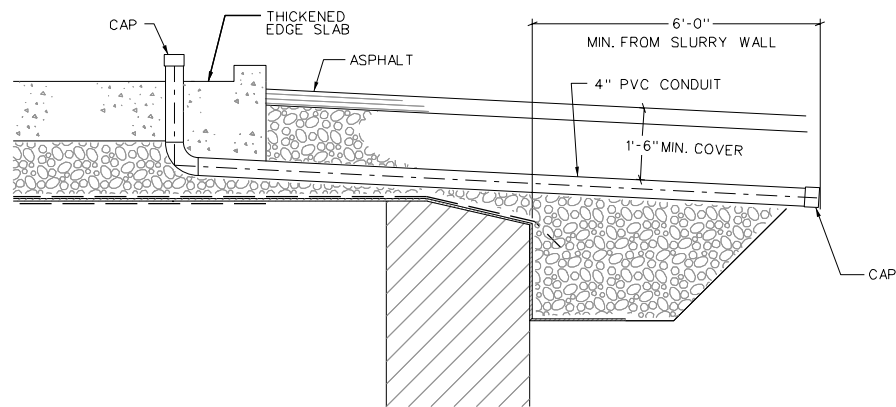


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SCALE: AS SHOWN		06.001.11	

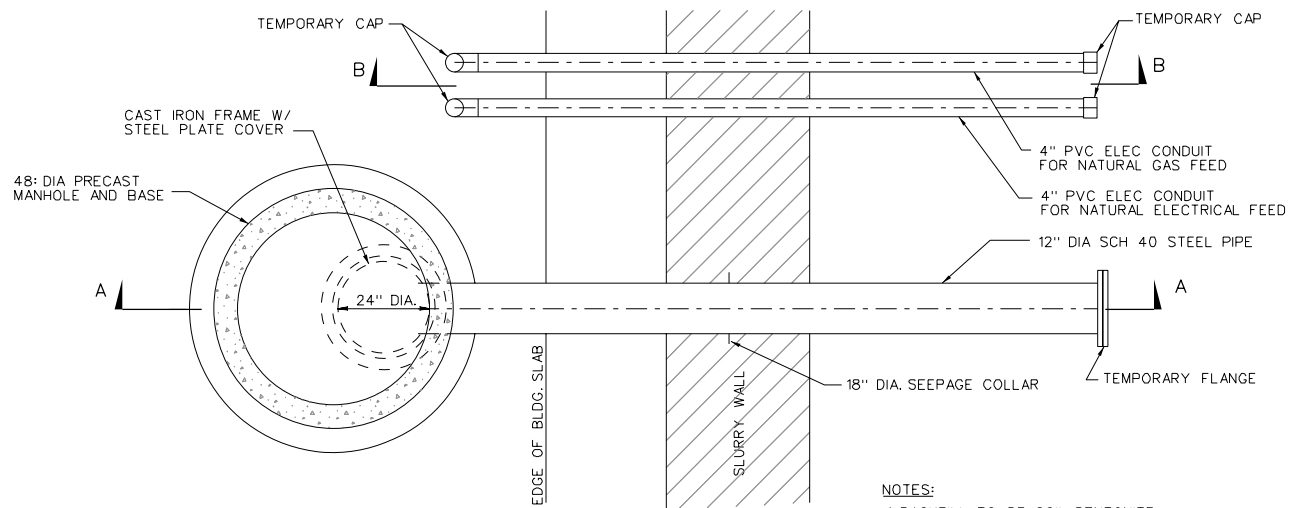
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SECTION A



SECTION B



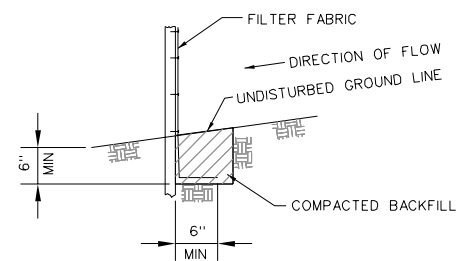
PLAN VIEW

UTILITY VAULT

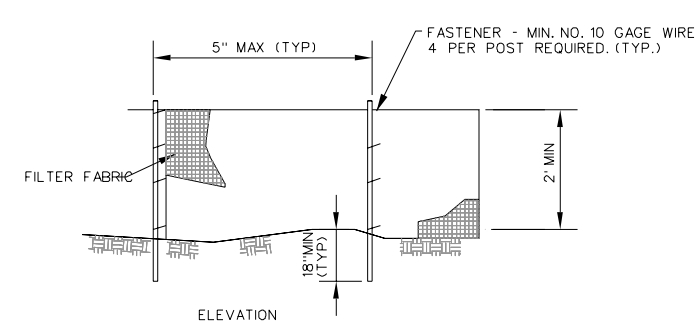
NOT TO SCALE

NOTES:

1. BACKFILL TO BE SOIL-BENTONITE MIXTURE CONTAINING AT LEAST 10% BENTONITE BY WEIGHT.
2. PENETRATIONS OF HDPE LINER BY PIPE AND CONDUIT SHALL BE AS SHOWN IN DETAIL 17, SHEET 13



FABRIC ANCHOR DETAIL



ELEVATION

NOTES:

1. TEMPORARY SEDIMENT FENCE SHALL BE INSTALLED PRIOR TO ANY GRADING WORK IN THE AREA TO BE PROTECTED. THEY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD AND REMOVED IN CONJUNCTION WITH THE FINAL GRADING AND SITE STABILIZATION.
2. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF CLASS L WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
3. FENCE POSTS SHALL BE EITHER WOOD POST WITH A MINIMUM CROSS-SECTIONAL AREA OF 3.0 SQ. IN. OR A STANDARD STEEL POST.

SILT FENCE

NOT TO SCALE

13
4

SECTIONS AND DETAILS (3 OF 4)

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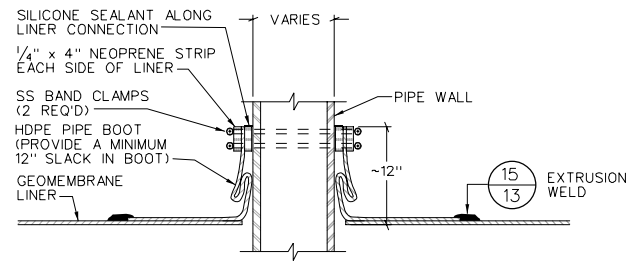
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DATE: 4-17-09
SCALE: AS SHOWN

SHEET 12

DRAWING NUMBER
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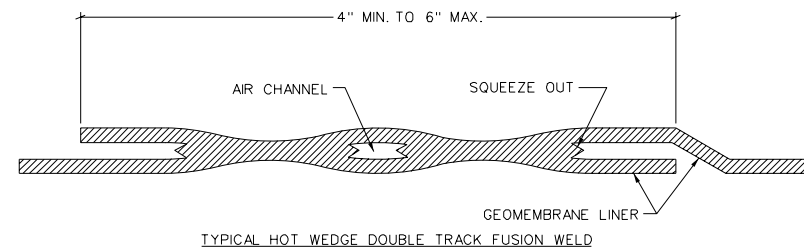
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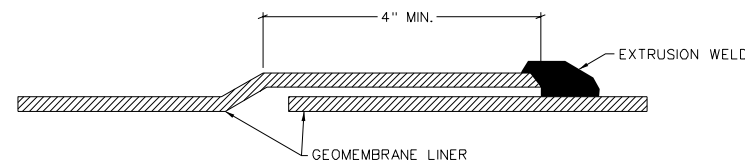
GENERAL DETAIL OF
LINER PENETRATION -
CIRCULAR PENETRATIONS

NTS

14
11 14
12



TYPICAL HOT WEDGE DOUBLE TRACK FUSION WELD



TYPICAL FILLET EXTRUSION WELD

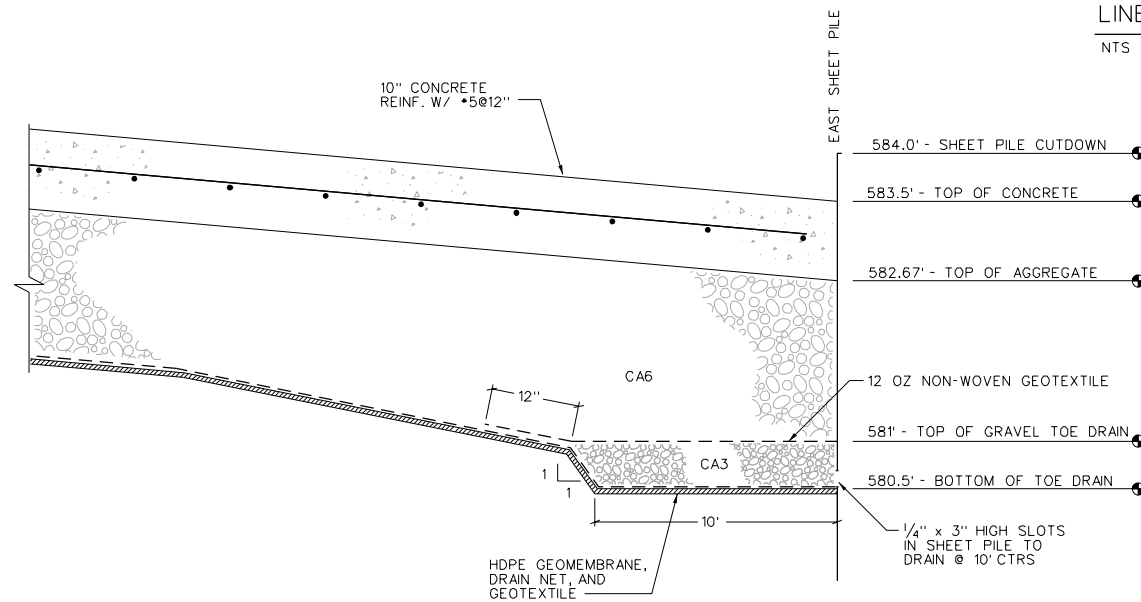
LINER WELD DETAILS

NTS

15
13

GENERAL NOTES:

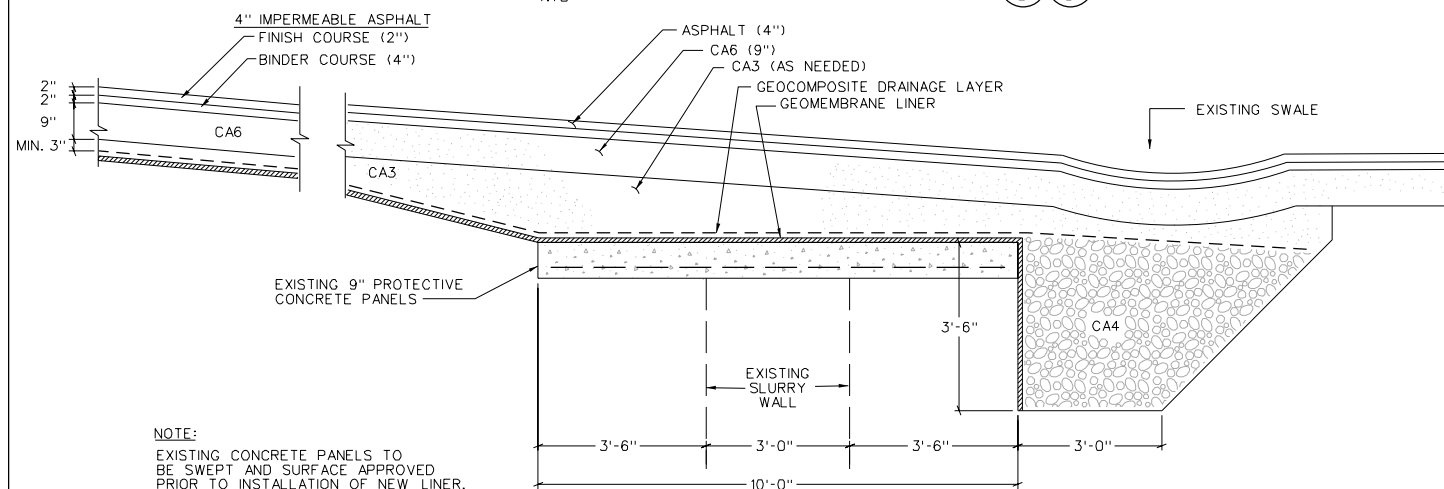
1. THE DRAINAGE LAYER CONSIST OF A GEONET DRAINAGE LAYER WITH A GEOTEXTILE HEAT BONDED TO THE UPPER SIDE. THE GEONET SHALL MEET THE FOLLOWING SPECIFICATIONS:
A) BI-PLANAR STRUCTURE
B) MINIMUM TRANSMISSIVITY 9.5 GAL/MIN/FT
C) THICKNESS: 5MM
D) MINIMUM TENSILE STRENGTH: 45 LB/IN
2. THE GEOTEXTILE, PRIOR TO ADHESION, SHALL MEET THE FOLLOWING SPECIFICATIONS:
A) MINIMUM MASS PER AREA: 12 OZ./SQUARE YARD
B) MINIMUM GRAB TENSILE: 170 LBS.
C) MINIMUM PUNCTURE STRENGTH: 90 LBS.
3. THE GEOCOMPOSITE SHALL MEET THE FOLLOWING SPECIFICATIONS:
A) MINIMUM MASS PER AREA: 6 OZ./SQUARE YARD
4. GEOMEMBRANE LINER SHALL BE 60-MILL HDPE MEETING THE FOLLOWING SPECS:



LINER TERMINATION TYPE I DETAIL

NTS

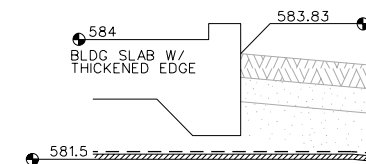
A
8 A
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LINER TERMINATION TYPE III DETAIL

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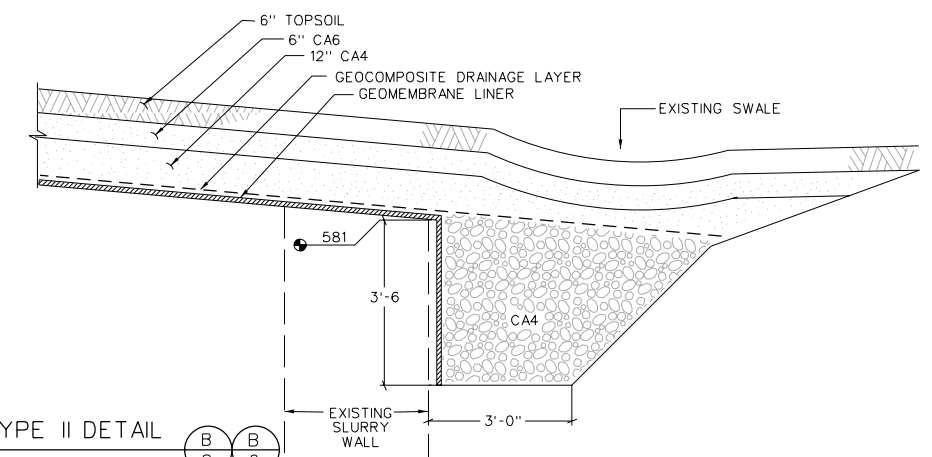
C
8 C
9



LINER TERMINATION TYPE II DETAIL

NTS

B
8 B
9



LINER TERMINATION TYPE IV DETAIL

NTS

D
8 D
9

SECTIONS AND DETAILS (4 OF 4)

SLIP 3 CONTAINMENT
ALTERATIONS / BOAT STORAGE

PREPARED FOR

CITY OF WAUKEGAN



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DATE: 4-17-09
SCALE: AS SHOWN

SHEET 13

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No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY
			AP'D BY	